NOTES ON THE EGG CAPSULES AND HATCHING OF *CRONIA AVELLANA* (REEVE, 1846) AND THE EGG CAPSULES OF *CRONIA PSEUDAMYGDALA* (HEDLEY, 1903)

(MURICIDAE: THAIDINAE)

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SUMMARY

The egg capsules of two species of the genus *Cronia* in Australia are described. The capsules of both species are low and rounded. They are laid separately, being cemented to the substrate and to each other. The size of the capsules varies from approximately 2.6 mm in diameter in *Cronia avellana* with a mean of 84 eggs per capsule, to 3.6 mm in diameter for *Cronia pseudamygdala* with a mean of 163 eggs per capsule. The young hatch as free swimming veligers.

INTRODUCTION

Cronia avellana (Reeve) and *Cronia pseudamygdala* (Hedley) are small whelks (to 3.5 cm) common in the littoral and sublittoral rocky areas. *C. avellana* is found between Cheynes Beach and Broome in Western Australia. *C. pseudamygdala* is found from northern Queensland to central New South Wales. Because of the close association of *Cronia avellana* with the whelk *Dicathais orbita* (Gmelin, 1791), some aspects of the vertical distribution on the shore, physiological tolerances and feeding behaviour were reported by Phillips (1969). In that paper it was identified as *Agnewia avellana* (Reeve) but is here emended to *Cronia avellana* (Reeve).

As pointed out by Anderson (1960) and Murray (1963), little is known of the egg capsules of the Muricidae in Australia. In this paper, data on the egg capsules, size, number of eggs per capsule and length of time to hatching of the veligers are presented for *C. avellana*, and on the egg capsules, size and number of eggs per capsule for *C. pseudamygdala*.

MATERIALS AND METHODS

All specimens of *C. avellana* were collected from the reef platform at Fish-Hook Bay at Rottnest Island in Western Australia (Phillips, 1969). Adults were held in aquaria connected to a closed circuit system at the Zoology Department of the University of Western Australia. After collection from the aquaria, egg capsules were held in 250 ml glass dishes, the water being changed daily. Specimens of the egg capsules of *C. avellana* have been deposited with the W.A. Museum.

The egg capsules of *C. pseudamygdala* were obtained courtesy of Dr. W. Ponder of the Australian Museum, Sydney. The adults had been collected from Long Reef, Sydney. The capsules were laid in an aquarium in the Australian Museum.

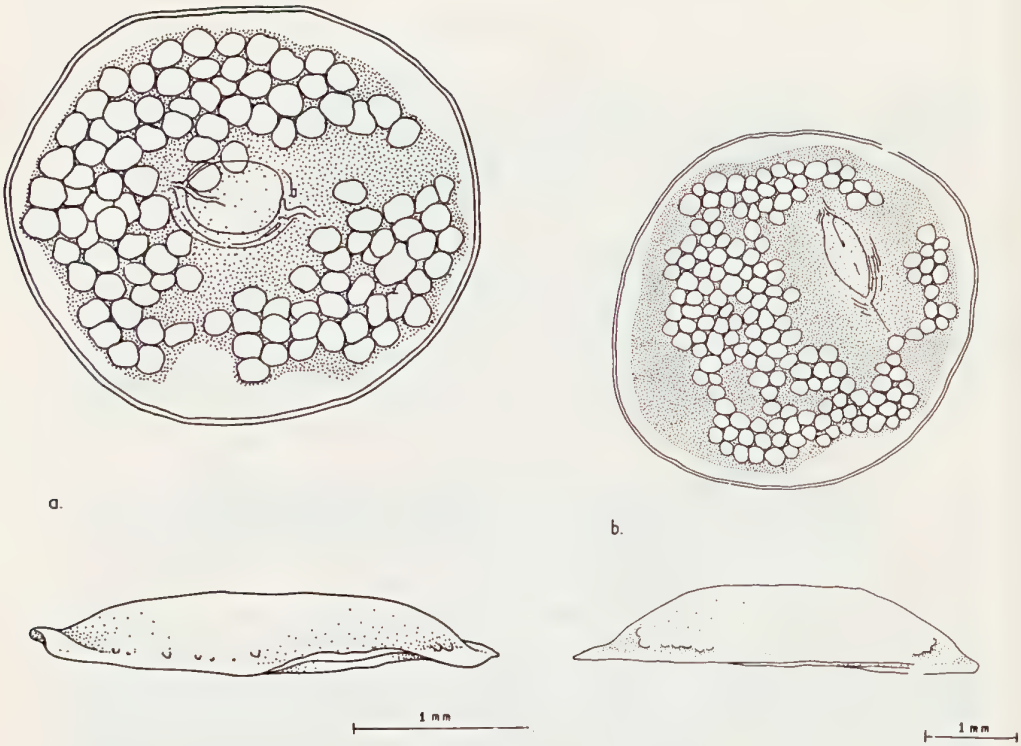

Fig. 1A. Egg capsules of *Cronia avellana* (Reeve).
Fig. 1B. Egg capsules of *Cronia pseudamygdala* (Hedley).
Block courtesy of F. V. Murray Memorial Fund.

RESULTS

Cronia avellana

At Fish-Hook Bay, the major part of the population of *C. avellana* is sublittoral although considerable numbers are present from time to time on the top of the platform (Phillips, 1969). Copulation and egg capsule deposition were not observed but capsules were found in the lower notch area along the shore of the platform in each year between 1964 and 1967. Deposition occurred in January and February (mid summer) in contrast to *Dicathais* in the same area in which the main deposition occurs in September and October (spring).

Unlike *Dicathais, C. avellana* deposited egg capsules in the laboratory. Deposition occurred at night, the capsules being cemented to the walls of the aquaria at the water level. Females did not tend to be gregarious in the site of deposition. Deposition in the laboratory occurred in January February, the same time of year as observed in the field, although the aquaria circuit was under approximately constant temperature conditions.

The number of capsules laid by a single female at one time varied from 1-7, apparently depending on size of female, although no measurements were taken. It was not possible to determine if females laid capsules

on more than one occasion. The capsules are low, rounded and approximately 2.6 mm in diameter (Fig. 1A). The capsules are laid separately They are cemented to the substrate and although no basement membrane was visible, they are cemented together. The area of aperture from which the veligers are released is approximately circular and 0.44 mm in diameter. The eggs are roughly spherical at the time of deposition of the capsules and approximately 0.16 mm in diameter.

The eggs of a total of 23 capsules were counted, yielding a mean of 84 (range 54-106) eggs per capsule. A range of hatching times of capsules laid by a single female occurs. Of a group of six capsules laid on 4 February 1966, two hatched on 10 March 1966, two on 11 March 1966, one on 14 March 1966 and the last on 17 March 1966, a mean of 36 days (range 34-41) to hatching. All of the eggs in the capsules developed and hatched, no nurse eggs being apparent. After hatching, the free swimming veligers (approximately 0.26 mm overall) showed a strong photopositive response. Facilities were not available to maintain these veligers.

Cronia pseudamygdala

The capsules of *C. pseudamygdala* (Fig. 1B) are similar to those of *C. avellana*. They are slightly larger than those of *C. avellana*, being approximately 3.6 mm in diameter. The area of the aperture from which the veligers are released is elliptical and measures approximately 0.64 mm x 0.36 mm. The eggs are roughly spherical at the time of deposition and approximately 0.20 mm in diameter.

The eggs of a total of 11 capsules were counted, yielding a mean of 163 (range 140-210) eggs per capsule.

DISCUSSION

The capsules of *C. avellana* and *C. pseudamygdala* are distinguishable by size, slight differences in shape of the aperture from which the veligers are released, and by the number of eggs per capsule. The capsules of *Cronia* spp. are similar to those of *Bedeva hanleyi* (Angas, 1867) described by Hedley (1916). The eggs of *Bedeva hanleyi* are, however, considerably larger being described as " . . . about 5 mm in diameter rather flatter than hemispherical, with a central orifice about 1.5 mm across." and have fewer eggs per capsule, a total of only 23 eggs per capsule being illustrated (pl. 49, figs. 23 and 24). The capsules of *Bedeva hanleyi* are also apparently deposited separately and not cemented together as in *Cronia*.

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